

STANDARD OPERATING PROCEDURE NO. 11

SEDIMENT COLLECTION USING GRAB SAMPLING DEVICE

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3.0 PURPOSE AND SCOPE

The purpose of this document is to define the standard operating procedure (SOP) for collecting sediment grab samples using a grab sampler (e.g., Van Veen) as part of the Newark Bay Study Area Remedial Investigation Work Plan (RIWP).

This SOP describes the equipment, field procedures, materials, and documentation procedures necessary to collect grab samples. Specific information regarding grab sampling can be found in the IWP.

This SOP may change, depending upon field conditions, equipment limitations, or limitations imposed by the procedure. Substantive modification to this SOP shall be approved in advance by the Facility Coordinator (FC) (or Alternate FC) and the United States Environmental Protection Agency (USEPA) Remedial Project Manager. The ultimate procedure employed will be documented in the Newark Bay RI Report.

Other SOPs will be utilized in conjunction with this SOP, including:

- SOP No. 1 – Field Documentation;
- SOP No. 3 – Decontamination;
- SOP No. 5 – Positioning; and
- SOP No. 9 – Management and Disposal of Residuals.

4.0 PROCEDURES

Grab samples may be collected within the Newark Bay Phase I Sediment Investigation (SI) Study Area using a grab sampler in conjunction with the biologically active zone (BAZ) investigation and core collection activities. During the BAZ investigation, three grab samples will be collected from each location occupied for sediment profile imaging (SPI). During core collection activities, grab sample may be collected adjacent to sediment core collection locations to obtain material for Beryllium-7 (^7Be) analysis. Neither of these sampling activities requires chemically-decontaminated sampling equipment.

Following sediment collection for either program, grab samples will be assessed/processed on the coring/sampling vessel. Samples for ^7Be will be subsequently transported to the sample processing area for packaging and shipping. Grab sample collecting and processing procedures are described in this SOP.

4.1 EQUIPMENT LIST

The following equipment list contains materials which may be needed in carrying out the procedures outlined in this SOP. Not all equipment listed below may be necessary for a specific activity. Additional equipment may be required, pending field conditions.

- personal protective equipment (PPE) and other safety equipment, as required by RIWP Volume 3 (Tierra, 2005);
- navigation charts and Phase I SI Program Core Locations figure – grab samples will be collected adjacent to core locations (Figure 6-1 of the IWP);
- coring/sampling vessel adequate for Newark Bay conditions;
- marine VHF radio;
- positioning equipment;
- grab samples (e.g., Van Veen);
- winch;
- Daily Activity Log, Grab Sample Collection Form, and BAZ Investigation Form;
- assorted nautical equipment (e.g., anchors, lines, personal flotation devices);
- logbooks;
- permanent waterproof marker or grease pencil;
- sample containers;
- stainless steel bowls/buckets or equivalent containers;
- plastic bucket;
- wet ice;
- insulated coolers;
- sample identification labels/tags;
- stainless steel spoons/spatulas;

- tape measure;
- fathometer with a resolution of 0.1 foot;
- camera; and
- decontamination equipment/supplies.

4.2 SAMPLING PROCEDURES

This section gives the step-by-step procedures for collecting grab samples using a grab sampler. Observations made during sediment grab sample collection should be recorded in the Daily Activity Log, Grab Sample Collection Form, and BAZ Investigation Form, and/or a logbook (SOP No. 1 - Field Documentation).

4.2.1 DECONTAMINATION OF EQUIPMENT

The grab sampler, stainless steel bowls/containers, stainless steel spoons/spatulas, and sieves will be cleaned with Newark Bay water in accordance with Section 4.2.3 of SOP No. 3 – Decontamination.

4.2.2 LOCATING POSITION

1. The BAZ or sediment sampling schedule for the day will be established prior to vessel departure, and sufficient equipment to complete the work will be on-board the sampling/coring vessel. Grab samples are anticipated to be collected adjacent to core collection locations where additional sediment volume is needed for ⁷Be analysis only, and following collection of all SPI images. Prior to departure each day, the vessel crew will be informed of the target sampling locations and the number of grab samples required at each location. In general, three grab samples will be collected at each BAZ location and one grab sample will be collected at each coring location where ⁷Be analysis is proposed (Section 6 of the IWP).
2. The sampling/coring vessel will move to a BAZ/coring location in accordance with SOP No. 5 - Positioning.

4.2.3 COLLECTION OF GRAB SAMPLES

1. Complete Daily Activity Log.
2. Don PPE as required by RIWP Volume 3 (Tierra, 2005).
3. Secure the grab sampler to a cable of adequate length connected to a winch. In some cases, the grab sampler may be deployed and retrieved manually. Set the device to close upon contact with sediment surface.
4. Slowly lower the grab sampler into its deployment orientation, just above the water surface.
5. Obtain water depth (to nearest 0.1 foot) from the fathometer and record on the Grab Sample Collection Form or BAZ Investigation Form.
6. Slowly lower the grab sampler into the water to the sediment surface using the water depth reading to anticipate when the bottom will be encountered. Allow the device to close, capturing the grab sample.
7. Prior to retrieving the grab, record the final sample location coordinates on the Grab Sample Collection Form or BAZ Investigation Form.
8. Slowly raise the grab sample to the deck of the sampling/coring vessel.

4.2.4 PROCESSING GRAB SAMPLES FOR BAZ INVESTIGATION

1. Release the contents of the grab sample into a plastic bucket. Scrape all sediment from the grab sampler for inclusion in the sample processing.
2. Perform in-field visual examination of sediment texture, sediment color, benthic invertebrate activity, etc., take photographs of sample, and record observations and photograph number in a field logbook.
3. If necessary, remove all large debris (i.e., rocks, leaves, sticks), then pass the entire sediment sample through a standard 500 micron mesh sieve by agitating the sieve in a sieve box containing Bay water to wash away the sediments to view the benthos.
4. Following sample processing, return sample to the Bay.

5. Clean the grab sampler and processing equipment with Newark Bay water in accordance with SOP No. 3 – Decontamination.

4.2.5 PROCESSING GRAB SAMPLES FOR ^7Be ANALYSIS

1. Access the sediment from the top of the grab sampler without releasing the contents of the dredge, and scrape the top inch of sediment using a stainless steel spoon/spatula into an appropriate sample container.
2. Appropriately label the sample container with the sample ID, date, and time, and record this information on the Grab Sample Collection Form.
3. Following sample collection, release the remainder of the sediment collected within the grab sampler into the Bay.
4. Clean the grab sampler and processing equipment with Newark Bay water in accordance with SOP No. 3 – Decontamination.
5. Store the sample container in an insulated cooler containing wet ice to keep samples cold while on the vessel until it can be transported to the Sample Processing Area.

5.0 QUALITY ASSURANCE

Completing the Daily Activity Log and BAZ Investigation or Grab Sample Collection Form provided in SOP No. 1 – Field Documentation, will document that the process is being followed and that pertinent information is being collected and recorded in accordance with the procedures outlined in this SOP. Entries in the forms and field logbook will be double-checked by the samplers to verify the information is correct. Completed forms and field logbook will be reviewed periodically by the FC and/or Project Quality Assurance Officer or their designees to verify that the requirements are being met.

6.0 DOCUMENTATION

Field notes will be kept during sampling activities in accordance with SOP No. 1 – Field Documentation. In addition to information contained in the Daily Activity Log and BAZ Investigation or Grab Sample Collection Form, the times of equipment decontamination will be recorded in a logbook.

7.0 REFERENCES

Tierra. 2005. Newark Bay Study Area Remedial Investigation Work Plan. Volume 3 Health and Safety/Contingency Plan. September.